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Herbal Medicine–Dream Unresolved

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Herbal Medicine is defined as branch of science in which plant based formulations are used to alleviate the diseases. It is also known as botanical medicine or phytomedicine. Lately phytotherapy has been introduced as more accurate synonym of herbal or botanical medicine. Recently, treatment of diseases with herbal medicine has been addressed as phytopharmacotherapy. Moreover, herbal medicinal products have been included lately in dietary supplements.

Early in the twenty century herbal medicine was a prime healthcare system as antibiotics or analgesics were not available. With the development of allopathic systems of medicine, herbal medicine gradually lost its popularity among people and it was based on the fast therapeutic actions of synthetic drugs. Almost a century has passed and we have witnessed limitations of allopathic systems of medicine. Lately herbal medicine has gained momentum and it is evident from the fact that certain herbal remedies peaked at par with synthetic drugs.

Keeping in mind the rapid pace of research and development in herbal medicine, it has become an interdisciplinary science. If we look at a scientific monograph of a medicinal plant, it can be concluded that knowledge of Alternative and Complementary Systems of Medicines like Ayurveda, botany, pharmacognosy and phytochemistry, biochemistry, ethno pharmacology and toxicology is integral part of herbal medicine.

Recently we have witnessed explosive growth of herbal drug industry. Data and meta-analysis have shown that more and more people are consulting herbal practitioners. Its cheering that the World Health Organization has also identified importance of herbal medicine. According to a study from U.S., 60-70% patients living in rural areas are dependent on herbal medicine for their day to day diseases.

Several authors have reported favorable results with herbal drugs (mostly in form of extracts) either in animal or in human studies. *Ginkgo biloba* L., *Echinacea purpurea* L., *Hypericum perforatum* L. and *Cimicifuga racemosa* (L.) Nutt., were subjected to clinical trials. Some studies reported usefulness of these herbal drugs. On the other hand some trials reported failure of the same drugs. Several studies reported lack of efficacy of *Echinacea* in the treatment of common cold. This drug once upon a time was popular treatment for common cold but soon it vanished from the stores. Same was the fate of *Ginkgo biloba* (used for tinnitus and amnesia) and *Cimicifuga racemosa* (used for hot flashes).

Hypericum perforatum was, however, an exception. In 1787, clinical studies were done on this plant and the majority of these showed that this plant was effective in the treatment of mild to moderate depression. In Germany alone, the sale of *Hypericum perforatum* was 20 times more than fluoxetine, the standard antidepressant. Soon, other uses of the plant were discovered as a result of the antiviral activity of hypericin, a red dye found in petals. Synthetic hypericin was synthesized and subjected to clinical trials for treatment of AIDS. Further research highlighted hyperforin as antidepressant principle of the plant. Soon *Hypericum perforatum* magic started fading as heavy drug interactions were reported.

It is difficult to understand why studies done prior to 2000 never reported serious drug interactions with *Hypericum perforatum*. Following that year, there were endless reports of drug interactions between *Hypericum perforatum* and synthetic drugs. These types of studies (either authentic or vague) only created confusion, if somebody is interested in herbal prescription.

Silybum marianum L., the reputed hepatoprotective, has remained a golden standard in the treated of liver ailments. Several years have passed but status of this herbal drug remains unquestioned. In India, a study reported that *Picrorrhiza kurroa* Royle., is more potent than *Silybum marianum* as hepatoprotective agent (however, this study is not complete in all aspects). If the results of the study were true, then more clinical trials were warranted with *Picrorrhiza kurroa*.

Ayurveda and Traditional Chinese Medicine are two important system of medicines largely based on medicinal plants. It is needless to say that Traditional Chinese Medicine is most developed system among Complementary and Alternative therapies. Comprehensive research has been done on phytochemical and pharmacological aspects of medicinal plants used in formulations.

Commiphora mukul (gugul) has been widely used as anti-inflammatory and anti-arthritic agent in Ayurveda. Several animal studies have reported anti-inflammatory activity of guggulsterones, the active constituents. Lately clinical trials have proved efficacy of *Commiphora mukul* in the treatment of rheumatoid arthritis and osteoarthritis.

The other side of the *Commiphora mukul* story was that guggulsterones were reported to inhibit cholesterol synthesis in the liver via antagonism to the farnesoid X receptor and the bile-acid receptor. Several clinical studies again demonstrated the usefulness of standardized extract of *Commiphora mukul* (guggulipid) in treating high levels of blood cholesterol. It was only in 1987 when standardized extract of *Commiphora mukul* was marketed in India.

This was not end of the story. In a recent study, guggulsterone activated nuclear receptors (estrogen receptor α , pregnane X receptor, and progesterone receptor). The study also showed that activation of pregnane receptor by guggulsterone led to induction of CYP3A genes in vitro. In India, a study reported that guggulipid decreases the bioavailability of propranolol and diltiazem.

Herbal drugs are significant source of hepatoprotective drugs. Mono and poly-herbal preparations have been used in various liver disorders. According to one estimate, more than 700 mono and poly-herbal preparations in the form of decoction, tincture, tablets and capsules from more than 100 plants are in clinical use. Surprisingly, several studies have appeared in journals addressing hepatotoxic potential of herbal drugs. These studies suggest that the drugs that were claimed to be hepatoprotective, are actually hepatotoxic.

We have addressed certain herbal drugs in this article. Initially a number of pre-clinical studies appear indicating the efficacy in animal models. Not many clinical studies have been done on herbal drugs. The manufactures have to depend on initial findings to develop herbal products. Literature supporting the herbal products is also based on animal findings. When an herbal product first appears on the market, it's not uncommon for studies of an adverse nature to appear in journals, thereby ending the commercial life of the product. This may be attributed to lack of clinical studies with herbal drugs.

Keeping in mind the latest trends in herbal drugs, there is need for making forums and discussion groups among researchers and physicians. Complete studies should be done on reputed herbal drugs and then they should enter the market. This will not eliminate the uncertainty among physicians who are at stake while prescribing herbal drugs. FDA and WHO should ensure that bogus agenda against herbal drugs is not addressed. A blueprint indicating clinically efficacious herbal drugs should be prepared.

In India, several steps have been taken to improve quality of Ayurvedic medicines. Good manufacturing practice (GMP) guidelines have been introduced so as to ensure quality control. Medicinal plant boards have been constituted at state and center level to inspire people, particularly the farmers for adopting cultivation of medicinal plants. Herbal gardens have been developed to make the common man conversant with the rich heritage of Indian system of medicine. Various institutes like NIPER,

NBRI, CIMAP and CDRI are playing pivotal role in laying down standards for Ayurvedic system of medicine.

To conclude it may be said that herbal drugs have provided us with potent weapons like atropine, codeine, taxol, vincristine and vinblastine. In the modern scenario, diseases are becoming drug-resistant and scientists are studying possible roles of plant based drugs for screening life saving drugs. The herbal system of medicine is a full fledged system of medicine and it can not be ruled out as quackery. Backing up this system is the fact that ancient findings and documentation have through the centuries provided us with leads on the development of life-saving drugs.